What is claimed is:

1. A method for the manufacture of a biocompatible porous prosthesis comprising the steps of:

(a) applying a solution to a porous support structure for a prosthesis, said solution comprising

(i) a biocompatible block copolymer including one or more elastomeric blocks and one or more thermoplastic blocks, and

(ii) a first solvent capable of dissolving said copolymer; and

(b) applying a second solvent capable of dissolving said first solvent but incapable of dissolving said copolymer to the surfaces of said prosthesis and thereby causing said copolymer to precipitate onto said support structure.

2. A method as recited in claim 1 wherein the porous support structure is a vascular stent, vascular graft, or vascular patch, a stent graft or a blood filter

3. A method as recited in claim 1 wherein the biocompatible block polymer has the general structure

(a) BAB or ABA,

(b) $B(AB)_n$ or $A(BA)_n$, or

(c) $X—(AB)_n$ or $X—(BA)_n$,

where A is an elastomeric block, B is a thermoplastic block, n is a positive whole number and X is a starting seed molecule.

4. A method as recited in claim 1 wherein the biocompatible block polymer is a triblock copolymer.

5. A method as recited in claim 1 wherein the block polymer is polystyrene-polyisobutylene-polystrene.

6. A method as recited in claim 1 wherein the solution of copolymer is applied to said support structure by dipping, submerging, solvent casting, spin coating, web coating, solvent spraying, ink jet printing or a combination of such processes.

7. A method as recited in claim 1 wherein said first solvent is a non-polar solvent.

8. A method as recited in claim 1 wherein said second solvent is a polar solvent.

9. A method as recited in claim 1 wherein said copolymer is present in said solution in from 0.5 to 50% by weight.

10. A method as recited in claim 1 wherein the coated porous support structure is heated or subjected to vacuum conditions to volatilize and thereby remove residual solvent.

11. A method as recited in claim 1 wherein the porosity of the copolymer deposited in the support structure is increased by reducing the concentration of copolymer in the solution.

12. A method as recited in claim 1 wherein the porosity of the copolymer deposited on the support structure is made greater, the greater the distance from the support structure, by one or more repetitions of steps (a) and (b), the concentration of copolymer in each sequential repetition of step (a) being less than in the prior step (a).

13. A method for the manufacture of a biocompatible porous prosthesis comprising the steps of:

(a) forming a solution comprising

(i) a biocompatible block copolymer comprising isobutylene and styrene or α-methylstyrene, and

(ii) a first, non-polar solvent selected from the group consisting of toluene, hexane, heptane, tetrahydrofuran, cyclohexane and methyl cyclohexane, capable of dissolving said copolymer, said solution comprising from 7% to 15% by weight copolymer,

(b) submerging a porous support structure for a prosthesis in the solution formed in step (a);

(c) removing the wetted support structure from said solution in step (b) and submerging it in a second, polar solvent selected from the group consisting of methanol, propanol, 2-propanol, ethanol, 1-butanol, 2-butanol, acetone and hexanol, capable of dissolving said first solvent but not capable of dissolving said copolymer, and thereby causing said copolymer to precipitate onto said support structure; and

(d) removing the coated support structure from said solvent in step (b) and removing residual first and second solvents from the coated support structure by volatilizing said solvents.

14. A method for the manufacture of a biocompatible porous prosthesis comprising the steps of:

(a) applying a solution to a mandril for a prosthesis, said solution comprising

(i) a biocompatible block copolymer including one or more elastomeric blocks and one or more thermoplastic blocks, and

(ii) a first solvent capable of dissolving said copolymer; and

(b) applying a second solvent capable of dissolving said first solvent but incapable of dissolving said copolymer to said mandril and thereby causing said copolymer to precipitate onto said mandril;

(c) removing solvent from the copolymer precipitated on said mandril by volatilizing it; and

(d) removing the so-formed prosthesis from said mandril.

15. A method for the manufacture of a biocompatible porous prosthesis comprising the steps of:

(a) applying a solution to a porous support structure for a prosthesis, said solution comprising

(i) a biocompatible block copolymer including one or more elastomeric blocks and one or more thermoplastic blocks, and

(ii) a mixture of solvents comprising a first solvent capable of dissolving said copolymer and a second solvent capable of dissolving said first solvent but not capable of dissolving said copolymer, said second solvent having a boiling point higher than that of said first solvent and being present in an amount less than that which causes said copolymer to precipitate out of said first solvent;

(b) volatilizing said first solvent from said solution, thereby causing said copolymer to precipitate onto said support structure.

16. A method as recited in claim 15 wherein solvent in the copolymer deposited on said support structure is removed by heating and/or subjecting the support structure to vacuum conditions.

17. A method as recited in claim 20 wherein said second solvent is present in said solution in an amount less than 95% of the titration point of said second solvent.

18. A method for the manufacture of a biocompatible porous prosthesis comprising the steps of:

(a) applying a solution to a mandril for a prosthesis, said solution comprising

(i) a biocompatible block copolymer including one or more elastomeric blocks and one or more thermoplastic blocks, and

(ii) a mixture of solvents comprising a first solvent capable of dissolving said copolymer and a second solvent capable of dissolving said first solvent but not capable of dissolving said copolymer, said second solvent having a boiling point higher than that of said first solvent and being present in an amount less than that which causes said copolymer to precipitate out of said first solvent;

(b) volatilizing said first solvent from said solution, thereby causing said copolymer to precipitate onto said mandril;

(c) removing solvent from said copolymer by heating said coated mandril; and

(d) removing said so-formed porous prosthesis from said mandril.

19. A method for the manufacture of a biocompatible porous prosthesis comprising the steps of:

(a) forming a solution comprising

(i) a biocompatible block copolymer comprising isobutylene and styrene or methylstyrene, and

(ii) a mixture of solvents comprising a first solvent capable of dissolving said copolymer and a second solvent capable of dissolving said first solvent but incapable of dissolving said copolymer, said second solvent having a boiling point higher than that of said first solvent and being present in an amount not exceeding 95% of that which causes said copolymer to precipitate out of said first solvent;

(b) submerging a porous support structure for a vascular prosthesis in the solution formed in step (a);

(c) removing the wetted support structure from the solution in step (b) and volatilizing said first solvent from the solution wetting said support structure, thereby causing said copolymer to precipitate onto the surfaces of said support structure; and

(d) removing said second solvent from the coated support structure by volatilizing it.

20. A porous prosthesis comprising a porous support structure coated with a biocompatible porous copolymer made by a process comprising the steps of:

(a) forming a solution comprising

(i) a biocompatible block copolymer comprising polystrene-polyisobutylene-polystyrene

(ii) a first solvent capable of dissolving said copolymer,

(b) submerging a porous vascular support structure for a vascular prosthesis in the solution formed in step (a);

(c) removing the wetted support structure from step (b) and submerging in a second solvent capable of dissolving said first solvent but not capable of dissolving said copolymer, and thereby causing said copolymer to precipitate onto the said support structure; and

(d) removing the coated support structure from the solvent in step (c) and removing said first and second solvents from the coated support structure by volatilizing them.

21. A porous prosthesis comprising polystrene-polyisobutylene-polystyrene made by a process comprising the steps of:

(a) forming a solution comprising

(i) a biocompatible block copolymer comprising polystrene-polyisobutylene-polystyrene

(ii) a mixture of solvents comprising a first solvent capable of dissolving said copolymer and a second solvent capable of dissolving said first solvent but not capable of dissolving said copolymer, said second solvent having a boiling point higher than said first solvent and being present in an amount not exceeding 95% of the titration point of said second solvent

(b) submerging a support structure for a prosthesis in the solution formed in step (a);

(c) removing the wetted porous support structure formed in step (b) from the solution and volatilizing said first solvent from the solution wetting said support structure, thereby causing said copolymer to precipitate onto said support structure; and

(d) removing second solvent from the deposited copolymer by heating the support structure,

22. A porous prosthesis comprising polystrene-polyisobutylene-polystyrene made by a process comprising the steps of:

(a) forming a solution comprising

(i) a biocompatible block copolymer comprising polystrene-polyisobutylene-polystyrene

(iii) a mixture of solvents comprising a first solvent capable of dissolving said copolymer and a second solvent capable of dissolving said first solvent but not capable of dissolving said copolymer, said second solvent having a boiling point higher than said first solvent and being present in an amount not exceeding 95% of the titration point of said second solvent

(b) submerging a mandril for a prosthesis in the solution formed in step (a);

(c) removing the wetted mandril formed in step (b) from the solution and volatilizing said first solvent from the solution wetting said mandril, thereby causing said copolymer to precipitate onto said mandril;

(d) removing second solvent from the deposited copolymer by heating the coated

mandril, and

(e) removing the so-formed porous prosthesis from said mandril.

23. A method for the manufacture of a biocompatible porous prosthesis comprising the steps of:

(a) pouring a solution comprising:

(i) a biocompatible block copolymer including one or more a first solvent capable of dissolving said copolymer; into a mold;

(b) immersing said gel in a second solvent capable of dissolving said first solvent but incapable of dissolving said copolymer;

(c) heating the gel and second solvent and thereby causing the block, copolymer to precipitate and form a porous solid; and

(d) removing residual solvent from said porous solid by volatilizing it.

24. A method for the manufacture of a biocompatible porous prosthesis comprising the steps of:

(a) forming a solution comrpising

(i) a biocompatible block copolymer including one or more elastomeric blocks and one or more thermoplastic blocks, and

(ii) a first solvent capable of dissolving said copolymer;

(b) pouring said solution into a mold;

(c) chilling said solution to form a gel;

(d) removing said gel from said mold and immersing it in a second solvent capable of dissolving said first solvent but incapable of dissolving said copolymer;

(e) heating the gel and second solvent and thereby causing the block copolymer to precipitate and form a porous solid having interconnecting pores; and

(f) removing residual solvent from said porous solid by volatilizing it.

25. A method for the manufacture of a biocompatible porous prosthesis comprising the steps of:

(a) pouring a solution comprising

(i) a biocompatible block copolymer including one or more elastomeric blocks and one or more thermoplastic blocks, and

(ii) a mixture of solvents comprising a first solvent capable of dissolving said copolymer and a second solvent capable of dissolving said first solvent but not capable of dissolving said copolymer, said second solvent having a boiling point higher than that of said first solvent and being present in an amount less than that which causes said copolymer to precipitate out of said first solvent;

into a mold

(b) chilling said solution to form a gel;

(c) heating the gel to volatilize said first solvent and thereby cause the block polymer to precipitate and form a porous solid having interconnecting pores.

26. A method for the manufacture of a biocompatible porous prosthesis comprising the steps of:

(a) pouring a solution comprising

(i) a biocompatible block copolymer including one or more elastomeric blocks and one or more thermoplastic blocks, and

(ii) a mixture of solvents comprising a first solvent capable of dissolving said copolymer and a second solvent capable of dissolving said first solvent but not capable of dissolving said copolymer, said second solvent having a boiling point higher than that of said first solvent and being present in an amount less than that which causes said copolymer to precipitate out of said first solvent;

into a mold

(b) chilling said solution to form a gel;

(c) removing said gel from said mold;

(d) heating the gel and/or subjecting it to vacuum conditions to volatilize said first solvent and thereby cause the block polymer to precipitate and form a porous solid having interconnecting pores; and

(e) removing residual solvent from said porous solid.